



CLAIMS in FWC of Serial No. 07/798,869

1. A lamp assembly operable to be inserted into and held by an ordinary Edison-type lamp socket; the lamp socket having socket electrodes at which is provided an AC power line voltage; the lamp assembly comprising:

a gas discharge lamp having lamp terminals;

base means operable to be inserted into and held by the Edison-type lamp socket; the base means having base electrodes operable to make electrical contact with the socket electrodes; the base means also including a combination of:

(a) rectifier means connected with the base electrodes and operative, whenever the base means is indeed inserted into the Edison-type lamp socket, to provide a DC voltage at a set of DC terminals;

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(b) inverter means connected with the DC terminals and operative to provide an inverter voltage from a pair of inverter terminals; the inverter voltage having a fundamental period consisting of four time segments: (i) a first time segment during which the magnitude of the inverter voltage remains at a first substantially constant level, (ii) a second time segment during which the magnitude of the inverter voltage increases in a substantially gradual manner, (iii) a third time segment during which the magnitude of the inverter voltage remains at a third substantially constant level, and (iv) a fourth time segment during which the magnitude of the inverter voltage decreases in a substantially gradual manner; the inverter means including: (i) a first transistor characterized by conducting current during the first time segment but not at other times, and (ii) a second transistor characterized by conducting current during the third time segment but not at other times; the duration of the first time segment being: (i) approximately equal to that of the third time segment, and (ii) shorter than half the duration of the fundamental period;

(c) current-limiting means connected between the inverter terminals and a pair of output terminals; and

(d) connect means operative to connect the output terminals with the lamp terminals.

48. The lamp assembly of claim 47 wherein the first transistor is characterized by having a pair of control terminals across which is applied a control voltage having a peak-to-peak magnitude substantially larger than twice the forward voltage drop of an ordinary semiconductor junction.

49. The lamp assembly of claim 47 wherein the inverter voltage has a peak-to-peak magnitude equal to the magnitude of the DC voltage.

50. The lamp assembly of claim 47 wherein the two transistors are series-connected across the DC terminals.

51. A lamp assembly operable to be inserted into and held by an ordinary Edison-type lamp socket; the lamp socket having socket electrodes at which is provided an AC power line voltage; the lamp assembly comprising:

a gas discharge lamp having lamp terminals; and

base means operable to be inserted into and held by the Edison-type lamp socket; the base means having base electrodes operable to make electrical contact with the socket electrodes; the base means also including a combination of:

(a) rectifier means connected with the base electrodes and operative, whenever the base means is indeed inserted into the Edison-type lamp socket, to provide a DC voltage at a set of DC terminals;

(b) inverter means connected with the DC terminals and operative to provide an inverter voltage from a pair of inverter terminals; the inverter voltage having a fundamental period consisting of four time segments: (i) a first time segment during which the magnitude of the inverter voltage remains at a first substantially constant level, (ii) a second time segment during which the magnitude of the inverter voltage increases in a substantially gradual manner, (iii) a third time segment during which the magnitude of the inverter voltage remains at a third substantially constant level, and (iv) a fourth time segment during which the magnitude of the inverter voltage decreases in a substantially gradual manner; the inverter means including a first transistor characterized by conducting current in its forward direction during at least part of the first time segment; the duration of the first time segment being: (i) approximately equal to that of the third time segment, and (ii) significantly shorter than half the duration of the fundamental period; the first transistor being operative to prevent the flow of current in its forward direction during the second and fourth time segments;

(c) current-limiting means connected between the inverter terminals and a pair of output terminals; and

(d) connect means operative to connect the output terminals with the lamp terminals.

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52. A lamp assembly adapted to be inserted into and held by an ordinary Edison-type lamp socket; the lamp socket having socket electrodes at which is provided an ordinary AC power line voltage; the lamp assembly comprising:

a gas discharge lamp having two lamp terminals; and
base means operable to be inserted into the Edison-type lamp socket; the base means having base electrodes operable to make electrical contact with the socket electrodes; the base means including frequency-converting ballast means connected in circuit between the base electrodes and the lamp terminals; the ballast means being operative to provide an AC voltage to the lamp terminals; the ballast means being characterized by including a periodically conducting transistor having: (i) a pair of control input terminals receiving a control signal, and (ii) a pair of output terminals across which exists a periodically varying transistor voltage; the periodically varying transistor voltage being characterized by having a fundamental period consisting of four time segments: (i) a first time segment during which the magnitude of the transistor voltage remains at a first substantially constant level, (ii) a second time segment during which the magnitude of the transistor voltage increases in a substantially gradual manner, (iii) a third time segment during which the magnitude of the transistor voltage remains at a third substantially constant level, and (iv) a fourth time segment during which the magnitude of the transistor voltage decreases in a substantially gradual manner; the transistor conducting current in its forward direction during at least part of the first time segment but not during most of the second time segment.

53. The lamp assembly of claim 52 wherein the control signal has a peak-to-peak magnitude substantially larger than twice the forward voltage drop of an ordinary diode junction.

54. The lamp assembly of claim 52 wherein the duration of the first time segment is significantly shorter than half the duration of the fundamental period.

55. The lamp assembly of claim 52 wherein no current flows through the transistor during any part of the fourth period.

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